National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material 885

Refined Copper

(In Cooperation with the American Society for Testing and Materials)

This Standard Reference Material (SRM) is in the form of pins approximately 13 mm long each weighing slightly less than 1 g. It is intended primarily for use in the calibration of instruments used in the determinations of sulfur and oxygen.

Element	Certified Value[1] percent by weight	Estimated[2] Uncertainty
Sulfur	0.0018	0.0003
Oxygen	.031	.002
Antimony	< .0002	--
Arsenic	< .0002	--
Bismuth	< .0001	--
Iron	< .0005	--
Lead	.0002	0.0001
Nickel	< .0001	--
Silver	.0005	.0002
Tin	< .0001	--
Zinc	< .0001	--

[1] The certified value listed for a constituent is the present best estimate of the "true" value based on the results of the cooperative program for certification.

[2] The estimated uncertainty listed for a constituent is based on judgment and represents an evaluation of the combined effects of method imprecision, possible systematic errors among methods, and material variability. No attempt was made to derive exact statistical measures of imprecision because several methods were involved in the determination of most constituents.

The overall coordination of the technical measurements leading to certification was performed under the direction of J.I. Shultz, Research Associate, ASTM/NIST Research Associate Program.

The technical and support aspects involved in the preparation, certification, and issuance of this Standard Reference Material were coordinated through the Standard Reference Materials Program by P.A. Lundberg.

Gaithersburg, MD 20899
March 25, 1991

William P. Reed, Chief
Standard Reference Materials Program

(over)

PLANNING, PREPARATION, TESTING, ANALYSIS:

The material for this SRM, in the form of pins, was furnished to NIST, gratis, courtesy of A. Cardinal, Phelps Dodge Refining Corp., El Paso, Texas.

Cooperative analyses for certification were performed in the following laboratories:

- Accredited Laboratories, Inc., Carteret, New Jersey, J.Anselmo.
- Asarco Inc., Amarillo Copper Refinery, Amarillo, Texas, D. Neill.
- Asarco Inc., Ray Unit, Hayden, Arizona, G.W. Self.
- Axel Johnson Metals, Inc., Exton, Pennsylvania, L.E. Creasy.
- Brush Wellman Engineered Materials, Elmore, Ohio, R. Hertz, J.A. Horner and J. Beard.
- Cerro Copper Products Co., St. Louis, Missouri, J. Schuster.
- Magma Copper Co., San Manuel, Arizona, T.A. Appelman.
- Phelps Dodge Refining Corp., El Paso, Texas, A. Cardinal and E.C. Thompson.
- Phelps Dodge Copper Products, El Paso, Texas, A. Cardinal and E. Ackall.
- Southwire Co., Carrollton, Georgia, J.F. Brewton, D. Lanier and J. Maxwell.

For Information Only

Elements other than those certified may be present in this material as indicated below. These are not certified, but are given as additional information on the composition.

Element	Concentration, Percent by Weight
Se	(<0.0001)
Te	(<0.0001)